

## CLAIMS

What is claimed is:

- 1 1. A method of restarting resource reservation protocol (RSVP) processes in multiple  
2 network devices, the method comprising the computer-implemented steps of:  
3 entering a recovery mode;  
4 sending a Hello message to a first neighbor RSVP node, wherein the Hello message  
5 comprises a non-zero Recovery Time value;  
6 completing the recovery mode;  
7 sending a Hello message to the first neighbor RSVP node, wherein the Hello message  
8 comprises a Recovery Time value of zero.
- 1 2. A method as recited in Claim 1, further comprising the steps of:  
2 receiving, from a second neighbor RSVP node, a Hello message having a non-zero  
3 Recovery Time value;  
4 storing information specifying that the second neighbor RSVP node is in a recovery  
5 mode.
- 1 3. A method as recited in Claim 2, further comprising the steps of:  
2 receiving, from the second neighbor RSVP node, a Hello message having a zero  
3 Recovery Time value;  
4 storing information specifying that the second neighbor RSVP node is in a normal  
5 mode.
- 1 4. A method as recited in Claim 2, wherein the step of creating and storing second  
2 information further comprises the steps of:  
3 receiving an RSVP PATH message that contains a Recovery Label;  
4 forwarding the PATH message to a downstream node with the Recovery Label only  
5 in response to determining that the PATH message is being sent to a node that  
6 is in recovery mode.

1 5. A method as recited in Claim 4, further comprising forwarding the PATH message to  
2 a downstream node with a Suggested Label in response to determining that the PATH  
3 message is being sent to a node that is not in recovery mode.

1 6. A method as recited in any of Claims 4 or 5, wherein the determining step is  
2 performed based on whether a Recovery Time value in a previously received Hello message  
3 is non-zero.

1 7. A method of restarting RSVP processes in multiple network devices, the method  
2 comprising the computer-implemented steps of:  
3 entering a recovery mode;  
4 sending a Hello message to a first neighbor RSVP node, wherein the Hello message  
5 comprises a non-zero Recovery Time value;  
6 completing the recovery mode;  
7 sending a Hello message to the first neighbor RSVP node, wherein the Hello message  
8 comprises a Recovery Time value of zero;  
9 receiving, from a second neighbor RSVP node, a Hello message having a non-zero  
10 Recovery Time value;  
11 storing information specifying that the second neighbor RSVP node is in a recovery  
12 mode;  
13 receiving, from the second neighbor RSVP node, a Hello message having a zero  
14 Recovery Time value;  
15 storing information specifying that the second neighbor RSVP node is in a normal  
16 mode;  
17 receiving an RSVP PATH message that contains a Recovery Label;  
18 forwarding the PATH message to a downstream node with the Recovery Label only  
19 in response to determining that the PATH message is being sent to a node that  
20 is in recovery mode;

21 forwarding the PATH message to a downstream node with a Suggested Label in  
22 response to determining that the PATH message is being sent to a node that is  
23 not in recovery mode.

1 8. A computer-readable medium carrying one or more sequences of instructions for  
2 restarting resource reservation protocol (RSVP) processes in multiple network devices,  
3 which instructions, when executed by one or more processors, cause the one or more  
4 processors to carry out the steps of:  
5 entering a recovery mode;  
6 sending a Hello message to a first neighbor RSVP node, wherein the Hello message  
7 comprises a non-zero Recovery Time value;  
8 completing the recovery mode;  
9 sending a Hello message to the first neighbor RSVP node, wherein the Hello message  
10 comprises a Recovery Time value of zero.

1 9. A computer-readable medium as recited in Claim 8, further comprising instructions  
2 for performing the steps of:  
3 receiving, from a second neighbor RSVP node, a Hello message having a non-zero  
4 Recovery Time value;  
5 storing information specifying that the second neighbor RSVP node is in a recovery  
6 mode.

1 10. A computer-readable medium as recited in Claim 9, further comprising instructions  
2 for performing the steps of:  
3 receiving, from the second neighbor RSVP node, a Hello message having a zero  
4 Recovery Time value;  
5 storing information specifying that the second neighbor RSVP node is in a normal  
6 mode.

1 11. A computer-readable medium as recited in Claim 9, wherein the step of creating and  
2 storing second information further comprises instructions for performing the steps of:  
3 receiving an RSVP PATH message that contains a Recovery Label;  
4 forwarding the PATH message to a downstream node with the Recovery Label only  
5 in response to determining that the PATH message is being sent to a node that  
6 is in recovery mode.

1 12. A computer-readable medium as recited in Claim 11, further comprising instructions  
2 for forwarding the PATH message to a downstream node with a Suggested Label in response  
3 to determining that the PATH message is being sent to a node that is not in recovery mode.

1 13. A computer-readable medium as recited in any of Claims 11 or 12, wherein the  
2 determining step is performed based on whether a Recovery Time value in a previously  
3 received Hello message is non-zero.

1 14. An apparatus for restarting resource reservation protocol (RSVP) processes in  
2 multiple network devices, comprising:  
3 means for entering a recovery mode;  
4 means for sending a Hello message to a first neighbor RSVP node, wherein the Hello  
5 message comprises a non-zero Recovery Time value;  
6 means for completing the recovery mode;  
7 means for sending a Hello message to the first neighbor RSVP node, wherein the  
8 Hello message comprises a Recovery Time value of zero.

1 15. An apparatus as recited in Claim 14, further comprising:  
2 means for receiving, from a second neighbor RSVP node, a Hello message having a  
3 non-zero Recovery Time value;  
4 means for storing information specifying that the second neighbor RSVP node is in a  
5 recovery mode.

1 16. An apparatus as recited in Claim 15, further comprising:  
2 means for receiving, from the second neighbor RSVP node, a Hello message having a  
3 zero Recovery Time value;  
4 means for storing information specifying that the second neighbor RSVP node is in a  
5 normal mode.

1 17. An apparatus as recited in Claim 15, wherein the means for creating and storing  
2 second information further comprises:  
3 means for receiving an RSVP PATH message that contains a Recovery Label;  
4 means for forwarding the PATH message to a downstream node with the Recovery  
5 Label only in response to determining that the PATH message is being sent to  
6 a node that is in recovery mode.

1 18. An apparatus as recited in Claim 17, further comprising means for forwarding the  
2 PATH message to a downstream node with a Suggested Label in response to determining  
3 that the PATH message is being sent to a node that is not in recovery mode.

1 19. An apparatus as recited in any of Claims 17 or 18, wherein the means for determining  
2 is based on whether a Recovery Time value in a previously received Hello message is non-  
3 zero.

1 20. An apparatus for restarting resource reservation protocol (RSVP) processes in  
2 multiple network devices, comprising:  
3 a network interface that is coupled to the data network for receiving one or more packet  
4 flows therefrom;  
5 a processor;  
6 one or more stored sequences of instructions which, when executed by the processor, cause  
7 the processor to carry out the steps of:  
8 entering a recovery mode;

9            sending a Hello message to a first neighbor RSVP node, wherein the Hello message  
10                comprises a non-zero Recovery Time value;  
11            completing the recovery mode;  
12            sending a Hello message to the first neighbor RSVP node, wherein the Hello message  
13                comprises a Recovery Time value of zero.

1    21.    An apparatus as recited in Claim 20, further comprising sequences of instructions for  
2    performing the steps of:  
3            receiving, from a second neighbor RSVP node, a Hello message having a non-zero  
4                Recovery Time value;  
5            storing information specifying that the second neighbor RSVP node is in a recovery  
6                mode.

1    22.    An apparatus as recited in Claim 21, further comprising the steps of:  
2            receiving, from the second neighbor RSVP node, a Hello message having a zero  
3                Recovery Time value;  
4            storing information specifying that the second neighbor RSVP node is in a normal  
5                mode.

1    23.    An apparatus as recited in Claim 21, wherein the step of creating and storing second  
2    information further comprises the steps of:  
3            receiving an RSVP PATH message that contains a Recovery Label;  
4            forwarding the PATH message to a downstream node with the Recovery Label only  
5                in response to determining that the PATH message is being sent to a node that  
6                is in recovery mode.

1    24.    An apparatus as recited in Claim 23, further comprising forwarding the PATH  
2    message to a downstream node with a Suggested Label in response to determining that the  
3    PATH message is being sent to a node that is not in recovery mode.

1 25. An apparatus as recited in any of Claims 23 or 24, wherein the determining step is  
2 performed based on whether a Recovery Time value in a previously received Hello message  
3 is non-zero.